

JASON II

An update report on the activities of the JASON group,
the Pentagon's prime resource of academic scientific consultants.

Introduction

In December, 1972, we published the booklet, "Science Against the People - The Story of JASON" ⁽¹⁾, describing in some depth this elite group of weapons scientists and, in particular, their contributions to the Vietnam war. Now, with that war in Indochina no longer of concern to the U.S., JASON has turned its attention back to the business of the big war problems: the nuclear armaments race between the U.S. and the Soviet Union. In this report we present the latest information gathered about JASON -- its new home, its current membership, and its latest projects. Our conclusion, drawn from the facts at hand, is that JASON constitutes a significant force directed against the interest of world peace.

(1) Available from SESPA, Box 4161, Berkeley, California 94704 (\$1)

JASON's New Home

Early in 1973, JASON left the Institute for Defense Analyses (IDA) in Washington D.C., which had been its home for almost 15 years, and moved into a new home created at the Stanford Research Institute (SRI) in Menlo Park, California. It has been speculated that this move away from the nation's capital and out to the west coast signified a demotion in prestige for JASON; or perhaps it is just that the search for the golden fleece naturally leads westward. In any case, we shall find it more interesting to compare the overall orientations of these two homesites on some objective bases.

The directorates of IDA and SRI reflect a basic difference in emphasis for these two large think tanks. Of the 20 member Board of Trustees of IDA (in 1970), 12 were academics, 1 was from inside IDA, and 7 were so-called "public trustees": these seven consisted of three retired generals and four big businessmen who also had some records of service within the Department of Defense (DOD). Thus, IDA is chiefly tied to the military-academic axis. By contrast, SRI's Board of Directors (1972) is composed of 1 academic, 3 people from inside SRI, and 9 members from large business concerns, showing its roots to be firmly planted in the corporate world.

IDA conducts research exclusively for the federal government. In 1970, with a total operating budget of \$14 million, it received 90% of its government income from the DOD. By comparison, in 1972 SRI total revenues were \$70 million; 42% of this was from the DOD, 33% from other government sources and 23% came from commercial clients. SRI is not only bigger than IDA, it is also more diversified. What is the thrust of SRI's non-military research program? "International development planning and implementation for governments and international organizations to accelerate economic and social advancement ... Applied research for profit-oriented clients interested in international trade, investment and market development opportunities." (quoted from SRI brochure.) SRI has established a position for itself as the leading research and planning advisor to the big multinational corporations.

The ethical philosophy which guides their application of scientific research to human problems was stated by SRI's president, Charles A. Anderson, "Our eyes remain fastened on the job of advancing man's knowledge in the service of our clients." (quoted from the San Francisco Chronicle financial page 12/12/69)

If SRI as a whole offers a broad range of services for all major sectors of the military-industrial complex (or, more generally, the system of U.S. imperialism), the JASON group remains centered on military matters. The work of JASON at SRI is funded under a contract from the DOD's Advanced Research Projects Agency (ARPA). Contract No. DAHCl5 73 C 0370 specifies as follows.

" The contractor shall establish and support a special study group to continue the work of the IDA JASON group. Under ARPA sponsorship, this group, which will number approximately 40 part-time consultants drawn primarily from the academic community, will work on technical problems as deemed appropriate by ARPA and the group. In general, the group will study basic defense research problems, identify basic research problems of potential value to the national defense that are not now receiving adequate attention in the scientific community, develop conceptual contributions toward solution of technical problems of the Department of Defense, and investigate other

areas of study as may contribute to the mission of ARPA. Technical work will include a summer study of approximately six weeks' duration; two- or three-day briefing sessions normally held in the fall and spring; defense-related laboratory visits; and part-time continued work throughout the year. "

That spells out JASON's mission very clearly as related to ARPA's mission. The mission of ARPA, within the DOD, is spelled out in the testimony of Dr. John S. Foster, Jr., Director of Defense Research and Engineering, in hearings before the House Armed Services Committee on April 12, 1973. (ARPA's name has recently been changed to DARPA and it has been given a new separate status within the DOD.)

"Technology is characterized by rapid change, with new opportunities arising from widely expanding knowledge. In this situation, it is important to invest part of our R&D resources at the leading edge of technology, to explore areas of high risk with a potential high payoff. We find that a small, highly capable, flexible and independent organization is needed to conduct this type of activity, and we look to DARPA to fulfill this requirement.

....Long-term commitments are not the rule in DARPA programs; rather, its function is to act as a leader and catalyst, demonstrating military potential as fast as possible. .. "

We shall return shortly to study some of these hot military research projects that ARPA and JASON are involved in currently.

JASON's People

In response to our written inquiry to ARPA headquarters in Washington, we have received (after a modest delay) a packet of official information about JASON's current activity, along with an up-to-date list of the group's members. These names are given on the next page, along with each person's university and departmental affiliation, as derived from standard reference sources. Previously, the most complete source list of JASON membership (obtained in the late 1960's and published by NACLA; see reference (1)) contained 43 names. It appears now that some of those previously identified as "members" of the group properly ought to have been titled as "advisors" or "consultants" to JASON; but aside from this minutia, we have learned of no error in the previous publications. Of that earlier group of 43, 23 remain members at present; they are joined by 10 new members, some of whom are young people and some of whom are senior people. Some of those former JASON members, no longer on the list today, dropped out of the group as far back as 1967, according to recent communications we have received. Some others resigned only last year. Overall, the group still can boast a predominance of members with absolutely first rate scientific reputations.

Professor Peterson has assumed the job as the JASON project supervisor within SRI; and Professor Watson has replaced Professor Lewis as chairman of JASON's internal steering committee.

During the summer of 1972, a number of distinguished JASON physicists were met with very vocal protests against their war-supporting work, while they were visiting in Europe. (See reference (1).) While it appears that the number of JASON s willing to risk this exposure the following summer, 1973,

U. of California:
 San Diego Norman M. Kroll (Physics)
 Walter H. Munk (Geophysics)
 William A. Nierenberg (Physics)
 Herbert F. York (Physics)
 Berkeley Richard A. Muller (Lawrence Berkeley Laboratory)
 Charles H. Townes (Physics)
 Kenneth M. Watson (Physics)
 Santa Barbara Harold W. Lewis (Physics)
 Santa Cruz Stanley M. Flatté (Physics)

Princeton U.: Curtis G. Callan (Physics)
 Roger F. Dashen (Physics)
 Freeman J. Dyson (Institute for Advanced Studies)
 Val L. Fitch (Physics)
 Edward A. Frieman (Astrophysical Sciences)
 Marvin L. Goldberger (Physics)
 Francis W. Perkins, Jr. (Astrophysical Sciences)
 Marshall N. Rosenbluth (Astrophysical Sciences)

Stanford U.: Samuel M. Berman (Physics, SLAC)
 Sidney D. Drell (Physics, SLAC)
 Joshua Lederberg (Genetics)
 Wolfgang K.H. Panofsky (Physics, SLAC)
 Allen M. Peterson (Electrical Engineering)
 Burton Richter (Physics, SLAC)

Columbia U.: Henry M. Foley (Physics)
 Richard L. Garwin (Physics)
 Malvin A. Ruderman (Physics)

Cal. Inst. Tech.: Frederik Zachariasen (Physics)

Dartmouth : Gordon J.F. MacDonald

Harvard U. : Steven Weinberg (Physics)

U. of Illinois : Charles P. Slichter (Physics)

Rockefeller U.: Kenneth M. Case (Physics)

NASA, Houston : Joseph W. Chamberlain (Lunar Science Institute)

R&D Associates : Robert E. LeLevier

was markedly reduced, there was still some renewed protest action abroad. In May, a large number of teachers at Delhi University objected to the visit of Dr. Roger Dashen, because of his JASON work, and his lecture was cancelled. In July, at a physics summer school in Cargèse, a statement condemning JASON, provoked by the presence of Dr. Curtis Callan, was signed by 90% of the participating scientists.

In this country, early in 1973, following publication of SESPA's booklet, "Science Against the People", the public criticism of this war-research group reached extraordinary heights. There was sharp activity against JASON in many places: Berkeley, Los Angeles, Columbia University (where there has been a continuing protest directed at the local JASON members for over two years), at the annual meeting of the American Physical Society, in the pages of "Science" and "Physics Today", as well as in the popular press and TV.

Most of the JASON people remained publicly silent in the face of this extensive criticism. Only a couple of them were willing to engage in public debate about their participation in the military programs. Some have complained privately, or not so privately, about what they consider the unfair tactics of their critics.

One former JASON member wrote to this author (in December 1973), "I resigned early this year -- I hadn't done anything on Jason for years, but I wouldn't resign while the heat was on." At about the same time, a continuing JASON member wrote, "After noting how the local SESPA group distorted and fabricated reasons for one .. colleague no longer being on a list of Jason members, I do not expect to see circumstances in which I would ask for my name to be removed even if my activities completely cease. "

Apparently, some JASON people have a large investment of pride and ego in the rectitude of their position, and issues of this petty sort seem to dominate over any attempt to discuss the substantive subject of their military involvement. Some might resign, but only for purely personal reasons (too busy, etc.) ; they appear unable to acknowledge that public opinion is a legitimate pressure to be felt by those who engage themselves in the public business. (For more on JASON's rationales for their work, see reference (1)).

Our chief concern will be with learning about and evaluating the ongoing work of JASON. We now turn to this task.

JASON's Work

From two quarterly reports summarizing JASON's activity at SRI, from April through September, 1973, we learn the following schedule. A 3-day Spring Meeting at SRI was attended by 20 JASONS. Dr. S.J. Lukasik, Director of ARPA, was the lead-off speaker in a series of lectures designed to lay out the variety of scientific problems that ARPA would like JASON to tackle; and plans were laid for JASON's major annual undertaking, the 6-7 week Summer Study. Twenty-four JASON members attended the Summer Study; and the topics worked on, along with a rough estimate of the relative expenditure on each, are enumerated in Table 1, reproduced on the following page.

On September 18, selected members of the group gave preliminary briefings to ARPA, reporting on the seven main results of the Summer Study (more on this

Table 1

SUMMER STUDY TOPICS

<u>Topic</u>	<u>K\$</u>	<u>Participants</u>
Underwater Sound Propagation	23.9	Munk, Callan, Flatté, Nierenberg, Richter, Rosenbluth, Watson, Zachariasen
Turbulence Theory	16.6	Case, Dyson, Frieman, Perkins, Watson
Frieman Panel	9.5	Frieman, Dyson, Garwin, Kroll, Lewis Peterson, Ruderman, Watson
Stratospheric Ozone	9.2	Ruderman, Chamberlain, Nierenberg
Ionospheric Modeling	8.8	Peterson, Perkins, Chamberlain, LeLevier
SALT-Related Issues	8.0	Drell, Garwin, Berman, Richter
Laser Interaction With Matter	6.1	Kroll, Watson
Ground-Based Optical SOI	5.3	Lewis, Dyson, Muller, Ruderman, Watson, Weinberg
LORAN	3.8	Berman, Peterson, Richter
RADAM	2.0	Peterson
Wave Interaction	1.7	Zachariasen, Callan
Lithospheric Propagation	1.3	Kroll
OTH-B	0.8	LeLevier, Nierenberg
Secure Voice	0.8	Lewis
Energy	0.2	Frieman

briefing later); and a dozen reports were in the process of being written up describing these accomplishments. (Material to be published must first be submitted to ARPA for "security review.") A fall meeting was scheduled for three days in November to be held at the Center for Naval Analyses in Rosslyn, Virginia (perhaps to continue their work on anti-submarine warfare, which we shall shortly discuss.) The total amount of money funded by ARPA for this work was \$472,623.

Now we shall try to interpret and analyze this information. This task is made difficult because of the cloak of military secrecy which envelopes JASON work. We have to work by inference from the titles shown in Table 1 and from other general discussions of current topics in strategic military technology. Also, from Congressional budget hearings we can get some descriptions of current ARPA projects. We have sought to obtain more information from JASON about the reports they have written on this past summer's work, but to no avail. (A letter was written to Dr. Peterson, asking for a list of titles and abstracts of the JASON reports covering last summer's work, and an indication of which reports were classified and which were available for public inspection. Two mailings of this letter -- one by registered mail -- plus three follow-up phone calls to JASON's SRI office, have yielded no response whatsoever. This tight-shut behavior was something of surprise, especially after we were advised privately by one JASON member that the group had resolved to be more open and cooperative with outsiders, apparently in an attempt to make up for the bad public image they earned last year.)

Turning our attention to the list of JASON Summer Study Topics, it is apparent that most of their attention is concentrated on the new technologies of strategic nuclear weaponry deep under the ocean and high up in the sky. The number one emphasis appears to be on techniques of anti-submarine warfare (ASW). The big unsolved technical question is how to locate enemy submarines throughout the ocean. Since electromagnetic waves (light, radio waves, radar) cannot propagate very far in the water, sound waves (sonar, for example) are the best bet. However, there are difficult problems about how to make a sonar system that can span the whole ocean and not get confused by false signals, such as reflections of sound from the suboceanic terrain, schools of fish, turbulence and other variations in the water itself. As a measure of JASON's primary effort on ASW research, we note the following three topics included in their post-summer briefing report to ARPA:

"Ocean-Emplaced Antenna for Lithospheric Propagation" (N. Kroll)

"Oceanic Hearing" (W. Munk)

"Numerical Simulation of Turbulence" (K. Case)

The upper atmosphere is important in planning for nuclear war for several reasons. Spotting and tracking of enemy targets or incoming missiles can be done by direct radar watching at the sky or by bouncing radar off the ionosphere and back down towards the earth. (OTH stands for "over-the-horizon" radar technique.) So it is necessary to know all the strange phenomena, natural fluctuations as well as effects induced by nuclear explosions, that can take place in the upper layers of the atmosphere. "SOI" stands for "space object identification"; and there have been new improved optical techniques worked out for checking on satellites and such threatening objects as both the U.S. and the U.S.S.R. have populated the heavens with. Laser weapons have also been the subject of much speculation, as possible devices to be used -- ray gun style -- against anything traveling overhead. A laser provides a very fast, very accurate, very powerful and concentrated energy beam; but the problem, so far, has been how to get through the atmosphere without losing

all the beam energy in random heating. The post-summer briefings that seem to relate to these general areas were:

"Optical Space Object Identification" (H. Lewis)

"Ionospheric Modeling" (F. Perkins)

"Ozone Suppression from Nuclear Explosions and Stratospheric Aircraft" (M. Ruderman) and perhaps also relevant here, the briefing on Turbulence, mentioned above.

The one remaining briefing report was entitled,

"Design Considerations for Strategic Bombers and Their Missile Armaments"

(R. Garwin). This probably relates to either of the Summer Study topics listed as "Frieman Panel" or "SALT-Related Issues", or perhaps both of them.

Further insight into the military interest behind the scientific studies undertaken by JASON can be gained by reading Congressional testimony given early in 1973 by ARPA's Director as he explained what his next year's budget was going to be spent for. Dr. Lukasik appeared before the Armed Services Committees of the Senate and of the House, on May 29 and June 5, respectively. Although many parts of his testimony have been deleted from the public transcript (for security reasons), we can get at least a minimum picture of where all this research is heading:

*** The Illiac IV, "the most powerful computer now in existence", has been installed at NASA-Ames Research Center and will bring a new ability to solve "many complicated problems in aerodynamics, nuclear physics, and atmospheric simulation." (Ames is right near SRI and JASON was briefed on the Illiac IV.) One special area of interest for atmospheric calculations is "to develop a capability for the quantitative prediction of climatic effects of any major human action" in view of the fact that "a relatively minor variation in climate can be as damaging to a nation as an overt act of war." Using the usual governmental doubletalk, Lukasik explained that we should develop a capability in this area (usually called weather modification warfare) in order to deter such possible threats "by other nations."

*** Concluding a discussion of the optical SOI problem, Lukasik stated, "Because of the technical importance of this work and the excellent research results achieved so far, we have planned an enlarged program in strategic space technology in the next fiscal year."

*** He also reported good progress on OTH radar (about to be turned over to the Navy and Air Force) and related problems of ionospheric modification.

*** ARPA emphasis in "the maintenance of the U.S. strategic deterrent" is placed on ASW research. On the one hand it is stressed that the nuclear submarines, because they are hidden in the ocean and thus invulnerable to a surprise attack, now provide the essential stability of the US-USSR mutual deterrence. On the other hand, however, a massive research effort is underway to seek ways of locating and tracking these submarines, thus rendering them vulnerable to attack.

Conclusion

We have seen that JASON's recent work is concentrated on those problems most in the forefront of Pentagon interests relating to the U.S. technological capabilities for nuclear warfare. To go beyond the general outlines we have drawn from the limited information at hand, it would be very helpful to see details of the JASON reports; but these have so far been denied us.

At the present time, the whole picture of the US-USSR nuclear arms race has taken on a very disturbing aspect. After the SALT I agreements, it has become

apparent that both sides have fully embarked upon the sort of "technological arms race" that was predicted, and feared. New qualitative advances in nuclear weaponry have the potentiality for upsetting the balance of terror, something which mere numbers of missiles could not do. The deployment of MIRV (multiple warheads) on the nuclear missiles, especially with the now announced plans for improved targeting accuracy and greater explosive power, will make the land-based ICBM forces vulnerable to a first strike; and success in the development of an ASW capability to knock out enemy submarines would lead to a situation of extreme instability, in which a first strike strategy would appear imperative.

The arms race is, of course, a reciprocal business. Each side says that it wants only to defend itself; and it develops weapons only for the stated purpose of deterring a possible attack by the other side. Yet, the kind of weaponry being developed and researched only makes each side fear that the other side may actually be going for a first strike capability. The logical outcome of this progression is catastrophic nuclear war.

Likewise, the JASON scientists (those whom we occasionally talk with) stress that their aim is to prevent, not to provoke nuclear war. But it is very difficult to make a credible distinction between the defensive and the offensive capabilities of some new weapons development, even in a purely theoretical discussion. And then there is always the question of whether their research results, intended by them to maintain the peace, might be applied by their masters in the Pentagon toward some reverse goal, for example, to achieve the capability to wage a "winning" nuclear war.

It is all too easy to find suggestions that this dangerous trend is at work in the Pentagon's planning. We noticed the following example in Lukasik's testimony before the House Committee (p. 3527): After explaining the fact that the US submarines are quieter than the Soviets', and that quietness helps keep the submarines undetectable and therefore secure from a surprise attack, Lukasik says, "The Soviet Union is attempting to reach a similar level of quieting for its submarines and, if they are completely successful, the United States will be faced with a threat which may not be detectable." As another indication of the very large push behind ASW development, there is the published estimate of the Navy's budget in this area as \$3.6 billion per year. (New York Times 1/17/74)

Add to all these disturbing facts the continuing veil of secrecy over these military scientific projects. This secrecy only serves to accentuate the fears, not only of the American citizen but also of the Soviet military planners, about the ultimate intended use of all this ever more sophisticated weaponry.

It is as if we are locked inside a moving vehicle from which there is no escape; the steering gear is out of control and the person in the driver's seat is unwilling or unable to apply the brakes; somewhere outside, in the fog of this unknown terrain, is a precipice, dropping off to oblivion; and to cap it all off, there is this expert mechanic, a man with a brilliant technical mind, who is busily at work to speed up the engine and make it work more efficiently. Our future seems very insecure.

ADDITIONAL INFORMATION REGARDING JASON

Professor Samuel Berman of Stanford University has informed the author that he is no longer a member of JASON.

Professor Malvin Ruderman of Columbia University has written to the author, stating that his work on Ozone Suppression (see page 22) is entirely unrelated to matters of nuclear warfare and is available in the open literature. He also stated that the author's guess about the subject matter of the "Frieman Panel" (see pages 20,22) is quite wrong; however, he was unable to say more about this because it was classified.

C. Schwartz
April 11, 1974